

## I. INTRODUCTION

This introduction presents background information on this 2001 Lebanon State of the Environment Report (SOER). It describes the methodology used to develop the SOER, the dual framework adopted, and the report's organization.

### I.1 Background

The Ministry of Environment has contracted ECODIT Liban to assist it in preparing the 2001 State of the Environment Report. Three versions of the SOER were prepared previously, in 1990, 1991 and 1995. In the period leading up to the Rio Earth Summit (June 1992), the then-Ministry of State for the Environment prepared the 1990 and 1991 SOERs. The World Bank/METAP provided support to the Ministry of Environment in preparing the 1995 SOER. The Lebanon SOERs have evolved gradually since the first one of 1990. The 1990 and 1991 SOERs described in qualitative terms the state of the environment, the pressures exerted by different economic activities, and the actions undertaken by the GoL to address environmental concerns. Those SOERs had very few quantitative data and did not indicate the sources of those data. While the 1995 SOER followed the same general organization, it researched and analyzed a wealth of data on environmental pressures and the state of the environment. The contents of the 1995 SOER needed to be updated to reflect changes that may have occurred since 1995, incorporate new information that was not previously available, and focus the analysis on environment-development linkages.

The 1995 SOER presents a lengthy overview of geography, population, and the economy of Lebanon as part of the introduction. In contrast, this 2001 SOER has a short introduction focusing on background, methodology, and the organization of the report. Rather than refer to the environmental legacy of the war, 10 years after it has ended, the 2001 SOER focuses on the "environmental legacy and opportunities" of peace times. Also, all population and economic aspects are addressed in other main parts of the report as they pertain to the 2001 SOER, and not in the introduction. Significant changes to the economic sectors (agriculture, industry, energy and transport, tourism) have occurred since 1995. Likewise, institutional and legal frameworks have evolved somewhat, and in certain ways to a great extent, since 1995, and so did the situation in water supply, sanitation, and solid waste management. Finally, more up-to-date and new information on the state of the environment has become available as a result of extensive research and studies carried out since 1995. The 2001 SOER uses the most up-to-date data to describe the current situation and conducts targeted comparisons with the situation described in the 1995 SOER. With regard to format, this 2001 SOER attempts to resolve some of the potential shortcomings in the presentation of information in the 1995 SOER (see Table 0.1).

The 2001 SOER aims to adopt a standard structure for all chapters to facilitate reading it. However, the 2001 SOER errs deliberately from the standard structure when (1) data are not available, (2) the subject matter lends itself better to a different organization, and (3) sticking to the strict structure would apportion a small topic to several chapters, making the subject matter too difficult to comprehend.

**Table 0.1**  
**Format Improvements Sought in the 2001 SOER**

Shorter (210 pages) and more to the point; Useful but distracting data and technical details put in annexes (13)
Uses graphs, tables, and figures selectively. For example, presents limited numerical data in tables, trends and evolution in graphs, distributions and percentages in pie charts, institutional organizations in diagrams
Diversifies presentation tools: paragraphs, boxes, footnotes, annexes, graphs, etc. to make the reading easier
Strives to keep the presentation of information as simple and streamlined as possible, and where it belongs. Keep redundancies where necessary to understand the text or emphasize a point
Uses diagram to illustrate, in the introduction, the nature of environment-development interactions, which form the logical basis for the report's structure
Provides clear and complete references, indicates units, dates, and sources of data, and clearly mentions all assumptions used for calculations, as relevant and appropriate
Makes sure that cross-references refer to specific sections and contain the necessary directions to find quickly the section, table or chart of interest. Those same cross-references will be built in the HTML version of the 2001 SOER on CD ROM.

## **I.2 Methodology**

ECODIT and MoE/LEDO worked hand in hand to prepare this 2001 SOER over a 10-month period starting in February 2001. Under its contract with MoE, ECODIT conducted the following tasks:

1. Reviewed the 1995 SOER and other similar references;
2. Reviewed all studies and reports related to the project;
3. Designed and present the overall format of the report;
4. Presented detailed table of contents of the report;
5. Identified the sectors and themes that require updating and explained the level and method of updating;
6. Determined the required information and information sources and presented them in the form of tables and graphs;
7. Designed and implemented methodology to collect required information;
8. Conducted surveys or applied studies, as necessary, to collect and evaluate information;
9. Wrote, reviewed and edited the SOER;
10. Submitted the project in the form of a report and a CD ROM;
11. Documented existing and missing information and suggested ways to collect and update them and identified all data sources used in the report;
12. Prepared and presented a methodology for use by the MoE to prepare and update the SOER in the future; and
13. Organized a workshop/seminar to present the SOER.

ECODIT delivered several intermediary outputs before this final SOER: inception report (February 2001), progress report (May 2001), prototype Transport Chapter (July 2001) and successive drafts of the 2001 SOER. The ECODIT Team held several team meetings or one-one meetings with the MoE/LEDO Follow-Up Committee to discuss progress and agree on orientations and next steps. ECODIT also held a number of meetings with key MoE employees in various departments, as well as project staff hosted by MoE, in order to better understand ongoing programs, projects and achievements. These meetings helped identify key policies and actions pertinent to major environmental issues. In parallel, and outside MoE, ECODIT contacted and met with a number of key individuals and organizations, both governmental and non-governmental. Appendix A lists all persons and institutions contacted.

At the kickoff meeting (January 12, 2001), ECODIT and MoE/LEDO agreed on the scope of the project (objectives, approach, and deliverables), exchanged information on available data sources and current issues, and agreed on working methods. ECODIT then reviewed the 1995 SOER to ascertain which parts could be incorporated in the revised SOER or needed updating. ECODIT also examined the format of the 1995 SOER, and compared it to other SOERs, and analyzed its overall suitability for the revised SOER. During the Inception Report meeting (March 3), ECODIT and MoE/LEDO agreed on the general format of the SOER.

ECODIT then identified and reviewed over 100 new references that have been published since 1995 and could serve as reference materials to prepare the 2001 SOER. ECODIT developed an annotated outline of the SOER that identifies and lists the issues that would need to be addressed under different topics. At the Progress Report meeting (May 4), ECODIT and MoE/LEDO discussed the proposed outline and made useful changes and amendments. As ECODIT was conducting two original surveys to gather baseline data on current university-level environmental programs and ecotourism activities, it drafted the transport chapter and delivered it to MoE/LEDO as a prototype chapter of the 2001 SOER. ECODIT received detailed and constructive comments from MoE/LEDO on both the form and the substance of the draft on this prototype chapter. ECODIT built on this experience with the prototype chapter to develop the full draft of this 2001 SOER.

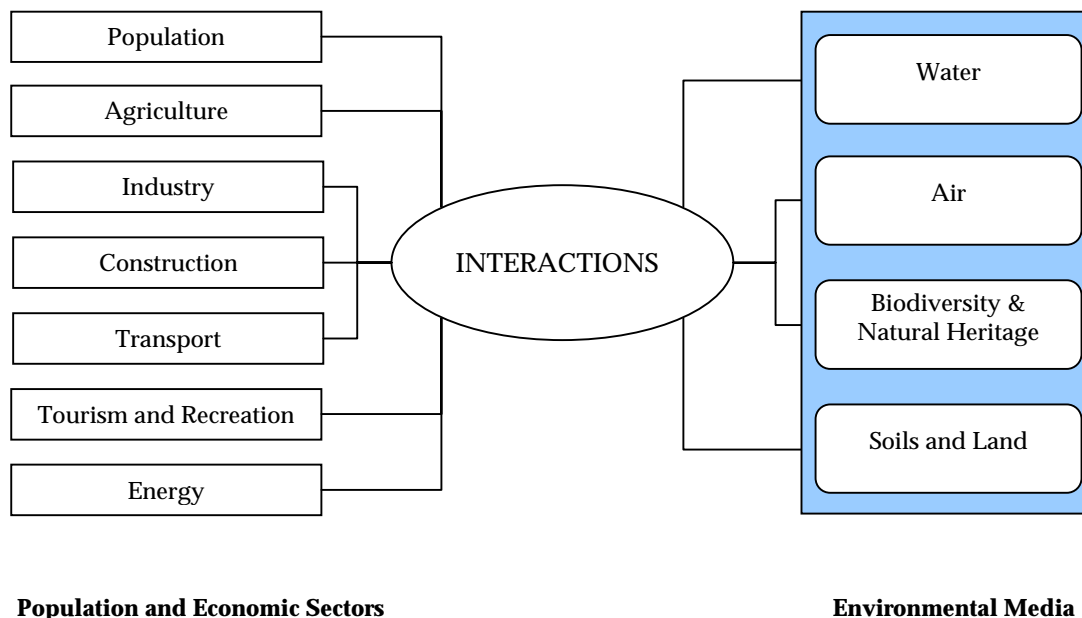
### **I.3 Dual Framework**

The 2001 SOER uses a "dual framework" methodology to describe and analyze environment-development linkages in Lebanon (see Figure 0-1). It describes the state of different environmental media (water, air, biodiversity, and soil/land) and the key linkages between them and various socio-economic development sectors (population, agriculture, industry, construction, transport, tourism and recreation, and energy). In other words, for each environmental medium, the 2001 SOER describes and compares, to the extent relevant and subject to data availability, the impacts caused by different socio-economic activities. At the same time, for each type of economic activities, the 2001 SOER analyzes the pressures on the environment exerted by those activities.

In preparing the 2001 SOER, a key issue arose about where to draw the line between the description of socio-economic sectors and the description of environmental media. MoE/LEDO and ECODIT agreed that, "for each sector, the report will describe, among others, the current situation of the sector, the available information and indicators related

to it, the environmental impacts of the sector [i.e., pressures on the environment], the institutions in charge of it, and current policies and plans to improve the sector.”

**Figure 0.1**  
**Dual Framework Representation of Environment-Development Linkages**



For illustration purposes, the report addresses industrial *pollution loads* (to air, water, soil) in the chapter on industry. Then, for each environmental medium, the report adds up and compares the pollution loads --for that medium-- across all relevant sectors. For example, in the chapter on air pollution, the report adds up and compares the *pollution loads* from mobile sources (transport), power plants (energy), and industries. According to the dual framework methodology, the 2001 SOER does not describe waste issues as part of the environment (i.e., next to water, air, biodiversity, soil/land), although they are treated as such by some SOERs (e.g., "*L'environnement en Suisse 1997*"). Instead, the 2001 SOER describes waste issues under the sectors responsible for generating them (*pressure indicators*) and/or the chapters on environmental management (*response indicators*). For example, the 1995 SOER described solid waste generation and management under the part on "Environmental Management." To be totally consistent with the dual framework methodology, however, the 2001 SOER introduces the *generation* of municipal solid waste under the part on "population" and the *management* of solid waste under the part on "environmental management."

The 2001 SOER applies the dual framework methodology with some flexibility, allowing for occasional variations to avoid too much partitioning of the text.

### *Forward approach*

The 2001 SOER uses a *forward approach* to presenting the dual framework. It describes, in this order, the sources of environmental degradation (i.e., population and economic activities), pressures they exert on the environment, and the resulting state of the environment. The logical flow would be inverted in the *backward approach*, where the

SOER begins with a description of the state of the environment, identifies and compares the pressures that each environmental medium receives from different types of activities, and then describes the level and type of activities.

Different countries have prepared SOERs, using either the forward or the backward approach, especially since the 1992 Earth Summit in Rio. ECODIT reviewed the 1995 Lebanese SOER and recent SOERs prepared by France, Switzerland, Germany, and Tunisia. After reviewing those SOERs, MoE/LEDO and ECODIT chose the forward approach (i.e., starting with causes/sources of environmental pressures and moving into environmental effects) for the 2001 SOER for the following reasons:

In reality, a true recognition of the development-environment linkages implies a back-and-forth causality chain between development and environment: development may affect the environment and, in turn, environmental degradation has an impact on long-term economic development. However, very rarely do SOERs dwell on the impacts of environmental degradation on the prospects for long-term economic development.

- ❑ With the forward approach, the 2001 SOER is easier to read and to compare to its predecessor --the 1995 SOER, which also used the same general format;
- ❑ Because more data are available on economic activities than on environmental media, it is more appropriate to develop the SOER using the forward approach;
- ❑ The forward approach serves to highlight upfront the environmental pressures from different sectors, hence stressing the important role that various sectors must play --in addition to the MoE-- to alleviate environmental degradation;
- ❑ Highlighting environmental pressures also is consistent with the way in which the MoE is organized according to pollution sources and environmental pressures, rather than environmental media; and
- ❑ Because reliable and up-to-date data are not readily available across all sectors and media, it may not be feasible to estimate the relative contributions of all sectors to each environmental degradation issue (e.g., relative contributions to soil erosion from different human activities). Without such estimation, the backward format loses its quintessence and the forward format becomes more adapted.

#### **I.4 Report Organization**

Consistent with the forward approach to the dual framework, the 2001 SOER is organized in an introductory part (Part I), a concluding part (V), and three core parts,

- Part II: Population and Economic Activities
- Part III: State of the Environment
- Part IV: Environmental Management

comprised of a total of 15 chapters (see Table 0.2).

The 2001 SOER follows a standard structure for all the chapters in Part II (except chapter one on population), consisting of the following four sections:

1. Targeted Description;
2. Pressures on the Environment;
3. Key Policies and Actions; and
4. Outlook.

Unfortunately, standardizing the section headings of subsequent chapters in Parts III and IV is not possible. Nevertheless, in Part III, State of the Environment, certain sections retain some degree of parallelism. For instance, in the chapters on water and air (Chapters 8 and 9, respectively), the underlying sections are organized as follows:

- State/quality of environmental media;
- Economic impacts (case studies on water and air pollution);
- Key policies and actions; and
- Outlook.

In general, the 2001 SOER addresses key policies and actions as well as pending developments under the headings “Key Policies and Actions” and “Outlook”, respectively.

**Table 0. 2**  
**General Outline of this SOER**

<i>PART</i>	<i>SECTION</i>
<b>I. Introduction</b>	
<b>II. Population and Economic Activities</b>	
1. Population	1.1 Administrative Boundaries
	1.2 Population
	1.3 Pressures
2. Agriculture	x.1 Targeted Description x.2 Pressures on the Environment x.3 Key Policies and Actions x.4 Outlook
3. Industry	
4. Construction	
5. Transport	
6. Tourism and Recreation	
7. Energy	
<b>III. State of the Environment</b>	
8. Water	8.1 Water Resources
	8.2 Uses and Functions
	8.3 Water Quality
	8.4 Economic Impacts of Water Pollution
	8.5 Key Policies and Actions
	8.6 Outlook
9. Air	9.1 Air Quality
	9.2 Economic Costs of Air Pollution
	9.3 Key Policies and Actions
	9.4 Outlook
10. Biodiversity and Natural Heritage	10.1 Flora
	10.2 Forests
	10.3 Fauna
	10.4 Karst Heritage

11. Soils and Land	11.1 Sources of Pressure 11.2 Land Use and Land Cover 11.3 Soils 11.4 Coastal Zone 11.5 South Lebanon After the Occupation
<b>IV. Environmental Management</b>	
12. Institutional Framework for Environmental Management	12.1 Legal and Regulatory Framework 12.2 Ministry of Environment 12.3 Other Government Agencies 12.4 Municipalities 12.5 Environmental NGOs 12.6 Research Institutions and Universities 12.7 Private Sector 12.8 Donors and Funding Institutions 12.9 Media
13. Land Management and Reforestation	13.1 Urban Planning 13.2 Nature Conservation 13.3 Reforestation and Combating Desertification
14. Solid Waste Management	14.1 Municipal Solid Waste Characteristics 14.2 Municipal Solid Waste Management in GBA 14.3 Municipal Solid Waste Management beyond GBA 14.4 Industrial Solid Waste Management 14.5 Outlook
15. Wastewater Management	15.1 Wastewater Collection, Treatment and Disposal 15.2 Key Government Policies and Actions 15.3 Outlook
<i>V. Highlights and Conclusions</i>	